



*International Civil Aviation Organization*

**MIDANPIRG Communication, Navigation and Surveillance Sub-Group  
(CNS SG/15)**

*(Doha, Qatar, 11 – 14 May 2026)*

---

**Agenda Item 5:            Spectrum Issues**

**OUTCOME OF THE 5<sup>TH</sup> MEETING OF THE FREQUENCY MANAGEMENT WORKING  
GROUP (FM WG/5)**

*(Presented by the Chairman of the FM WG and Secretariat)*

**SUMMARY**

This paper presents the outcome of the 5<sup>th</sup> Meeting of the Frequency Management WG (FM WG/5), that was conducted back-to-back with the CNS SG/15 meeting.

Action by the meeting is at paragraph 3.

**1.        INTRODUCTION**

1.1            The 5<sup>th</sup> meeting of the Frequency Management WG (FM WG/5), was conducted from 10-11 May 2026. It was attended by 46 participants from eight (8) States and three (3) international and regional organizations.

**2.        DISCUSSION**

***Frequency Congestion***

2.1            The Frequency Congestion issue was addressed by WP/2, WP/3, WP/8, WP/9, and IP/3, presented the Secretariat, Saudi Arabia, and Iraq, respectively.

2.2            The meeting addressed the issue of VHF COM and NAV frequency congestion in the MID Region and considered the following measures to mitigate it:

- Revision of the MID Region allotment plan by reducing the sub-band allocated to AOC in order to make it available for other services
- Enhancement of the ICAO database quality to support more accurate frequency assignment and separation;
- Consideration of additional measures to increase available spectrum capacity, including the implementation of 8.33 kHz channel spacing; and
- Exploration of various approaches to optimize the use of DME.

2.3 The meeting recalled that, in order to increase the amount of spectrum available for aeronautical services (VHF COM), MIDANPIRG/20 tasked the FM WG, through Decision 20/35, to review and amend the regional frequency allotment plan as deemed necessary. It is worth noting that the regional frequency allotment tables are an integral part of the ICAO Regional Air Navigation Plan and are published as a supplement to ICAO Doc 9718, Volume II.

2.4 In line with the MID Air Navigation Plan (MID ANP), Volume II, the meeting recalled the priority order to be followed when assigning frequencies to services, as follows:

- a) ATS channels serving international services (ACC, APP, TWR, FIS);
- b) ATS channels serving national purposes;
- c) channels serving international VOLMET services;
- d) channels serving ATIS and PAR; and
- e) channels used for other than ATS purposes.

2.5 The Meeting noted with appreciation the comprehensive analysis conducted by Iraq on the MID Region allotment plan, which included allocated channels for each service, a comparison of allotted channels in the MID Region with other ICAO Regions, sub-band utilization, and identified issues in the current assignments.

2.6 The meeting noted Iraq's proposal to reduce the AOC band to 130.9–132.025 MHz (46 channels) and agreed that the Frequency Finder tool should be utilized to conduct a comprehensive assessment of channel availability for each service within the MID Region. In this regard, Egypt requested that the meeting defer finalization of this proposal to FM WG/6, as they require time to assess it and coordinate internally with relevant service providers.

2.7 The meeting also noted with concern that the ICAO database contains inaccurate assignments, including errors in airport names, service locations, and registered Designated Operational Coverage (DOC), which in some cases exceed the actual geographic area of the designated sector. In addition, several duplicate assignments were observed in the ICAO VHF COM database.

2.8 In this regard, the meeting recalled that MIDANPIRG/20 urged States, through Conclusion 20/36, to coordinate with ICAO MID Office before assigning frequencies for aeronautical services (VHF COM, VHF NAV) and perform an update/review of the data in the VHF-COM/NAV module, to optimize the frequency assignment planning and mitigate VHF frequency congestion.

2.9 The meeting also received an update on the initiative taken by ICAO to clean up the database and enhance the quality of registered assignments (ICAO database Data Quality Control) . A comprehensive review, including a comparison with published AIP data, has been completed, and an Excel file has been prepared for each State to reflect this information. Due to time constraints, the meeting was unable to review and update States' files during the meeting sessions. It was therefore agreed to arrange one-to-one meetings between ICAO and the involved States in the third quarter of this year.

2.10 The meeting noted that, due to GNSS RFI concerns, several States have recently installed additional DMEs, which could contribute to increased DME spectrum congestion in the Region. The meeting was also apprised of a study conducted by Airbus and EUROCONTROL, which

indicated that DME utilization beyond 130 NM is very limited, with only 2.25% of flights selecting DMEs at distances greater than 130 NM.

2.11 The meeting was also apprised of the following five potential approaches for increasing the availability of DME channels. The technical feasibility of each measure needs to be assessed in greater detail, and the meeting agreed to consider these approaches for the future reduction of DME congestion in the MID Region. In addition, the meeting agreed on the need to clean up NAV data in a manner similar to the COM3 database:

- a) Limit Designated Operational Coverage (DOC) range to 130NM (in line with FMS DME selection logic)
- b) Tailoring the transmitting power (EIRP) to the DOC range
- c) Avionics Un-pairing DMEs from ILS and VORs
- d) Utilization of Z-channel
- e) Implementation of Double-DOC

2.12 Based on all the above, the meeting agreed to the following Conclusion:

***DRAFT CONCLUSION 5/1: FREQUENCY CONGESTION***

*In order to reduce COM and NAV frequency congestion and enhance frequency availability in the MID Region, States are required to complete the following actions by the end of the year:*

- a) *Complete the review and update of their frequency assignment data in the current ICAO database;*
- b) *Provide their projected frequency requirements up to 2034 using the questionnaire provided in Appendix A, to enable ICAO to conduct the necessary simulations and assess with States the need for implementing reduced channel spacing (8.33 kHz);*
- c) *Complete the review of the MID Region allotment plan for processing by ICAO and inclusion in the relevant ICAO documents.*

2.13 The meeting was apprised of updates to the regional and inter-regional frequency assignment procedures, including those related to future space-based VHF assignments.

2.14 The meeting noted the project phases and timeline of the new online ICAO Frequency Finder tool, as well as the update of the existing tool to incorporate the new SSR module.

***Interference Detection and Resolution***

2.15 The interference detection and resolution issue was addressed in WP/4 and WP/10, presented by the Secretariat and UAE, respectively.

2.16 The meeting was apprised of the coordination mechanism between the Civil Aviation Authorities and the national radio regulator in the UAE, and noted the process for handling interference

complaints, including geolocation of the interference source, actions to eliminate it, coordination with national and external stakeholders, and reporting and escalation procedures.

2.17 The meeting emphasized the need for States to establish a similar coordination mechanism between their Civil Aviation Authority and national radio regulator.

2.18 The meeting was apprised of the provisions and recommendations related to optimizing interference detection and resolution, through effective spectrum regulatory measures and enforcement, as contained in the relevant ICAO Resolutions emanating from the 42<sup>nd</sup> session of the ICAO Assembly, Recommendations from the 14<sup>th</sup> Air Navigation Conference, and the recommended actions from the 1st and 2<sup>nd</sup> ICAO Radio Navigation Symposiums. It also noted the ICAO/ITU/IMO joint Declaration on the protection of GNSS from harmful interference and WRC-23 Resolution 676.

2.19 The meeting discussed means to enforce these provisions and recommendations, given the importance and criticality of the issue. It was agreed that ICAO would provide a survey listing the required actions along with their references and monitor implementation using the matrix in **Appendix B**.

2.20 Regarding the following Recommendation: “*Radio regulatory authorities of States need to step up enforcement against GNSS jamming transmitters (GPS jammers) while educating the public about their illegality, without unintentionally exposing system vulnerabilities. Law enforcement should monitor and act against online marketplaces selling such devices. Additionally, making the ownership of GPS jammers illegal will help authorities confiscate them more effectively and strengthen regulatory control*”, the meeting received a best practice from the GCC, led by Bahrain. Bahrain reported that it had communicated with online marketplaces, requesting them to prohibit the sale of illegal transmitters to Bahrain and had enhanced collaboration with customs authorities to prevent their importation. GCC agreed to adopt similar measures. Consequently, the meeting agreed to the following Conclusion:

**DRAFT CONCLUSION 5/2: MITIGATING INTERFERENCE THROUGH EFFECTIVE  
SPECTRUM REGULATORY MEASURES AND  
ENFORCEMENT**

*That, in order to implement ICAO Resolutions and Recommendations related to the mitigation of interference through effective spectrum regulatory measures and enforcement, States are urged to carry out the actions listed in **Appendix B** and provide feedback to the CNS SG/16 meeting, for monitoring and appropriate action.*

***Preparation of WRC-27***

2.21 The preparation for WRC-27 and Radio Altimeter issues were addressed by WP/5, WP/6, and WP/7, presented by the Secretariat.

2.22 The meeting was briefed on ICAO provisions concerning the aeronautical spectrum strategy and policies, the relevant Assembly Resolution, and the process for preparing ICAO's WRC position.

2.23 The meeting noted that, although WRC-27 does not include agenda items specifically on aviation safety frequency allocations, several items could nonetheless impact aeronautical safety services, including:

- a) WRC-27 Agenda Item 1.7
- b) WRC-27 Agenda Item 1.9
- c) WRC-27 Agenda item 1.17
- d) WRC-27 Agenda item 1.19
- e) WRC-27 Agenda item 9.1
- f) Other WRC-27 Agenda Items of prime interest to aviation include: 1.11, 1.12, 1.13, 4, and 8.

### ***Radio Altimeter***

2.24 The meeting noted that Radio or Radar Altimeters are essentially primary radars pointing towards the ground. They provide a direct measurement of the clearance height of the aircraft over terrain or obstacles. These Radars operate in the 4.2-4.4 GHz frequency band.

2.25 Radio Altimeter (RA) provides real-time, highly accurate readings, and output from the Radio Altimeters is used for the Ground Proximity Warning System (GPWS) or Terrain Alerting or Warning System (TAWS).

2.26 The meeting noted with concerns that WRC agenda item 1.7 seeks, based on sharing and compatibility studies, to identify additional spectrum for international mobile telecommunications (IMT) in one or more frequency bands, including the 4 400 – 4 800 MHz, which is immediately adjacent to the Radio Altimeter (RA) band, 4 200 – 4 400 MHz. The RA are very vulnerable to out-of-band emissions from high powered IMT base stations. While the RA SARPs currently under development will provide considerable improvement to adjacent band interference rejection, the next generation RA will still be vulnerable to adjacent band transmissions when close to the 4 400 MHz band-edge. The new RA SARPs are expected to be available no earlier than 2027. This may be too late to facilitate ITU-R preparatory studies for WRC-27.

2.27 IATA emphasized that the availability of RA SARPs in 2027 does not imply immediate implementation, as there are cost considerations and challenges related to aircraft retrofitting. Therefore, it is crucial for States to collaborate to protect RA from potential interference.

## **3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) Urge States to actively participate in WRC-27 and its preparatory workshops, coordinate with their national radio regulators to ensure that ICAO positions are reflected in national and regional WRC-27 positions, and to send representatives to join the States' delegations at WRC-27; and
- b) Agree to draft Conclusions 5/1 & 5/2

-----

## SUBMISSION OF FREQUENCY REQUIREMENTS FOR THE PERIOD 2026 – 2034

1.1 The primary purpose of this simulation is to determine if a congestion in the use of frequencies can be foreseen that would require the implementation of 8.33 kHz channel spacing in any parts of the MID Region.

1.2 With the view to determine the medium-term spectrum requirements for VHF communication services, States are invited to submit these requirements to the MID Regional Office by **Q4 2026**. On the basis of these requirements, ICAO will undertake an analysis that is aimed at determining whether these requirements can be assigned a frequency within the available 25 kHz channels.

1.3 In this case, States can introduce the requirements in the local version of Frequency Finder and generate with the button “Export Submissions” an Excel file that can be submitted to the Regional Office.

1.4 States are able to download the Frequency Finder tool from Frequency Spectrum Management Panel (FSMP) webpage at: <https://www.icao.int/safety/FSMP/Pages/Documents.aspx>, and ICAO will provide assistance for any difficulties in installation and use of this ICAO tool.

1.5 Precise details not available.

1.5.1 When precise details are not available for future frequency requirements, States can submit such requirements in any format.

1.5.2 Example 1: For a new airport, States can submit the (approximate) coordinates and specify the need for:

- x TWR frequencies
- x Aerodrome surface frequencies
- x APP-U frequencies
- x APP-L frequencies
- x ACC-U frequencies
- ATTM.- 2
- x ACC-L frequencies
- x VOLMET frequencies
- x ATIS frequencies
- x VDL frequencies

-----

*Effective Spectrum Regulatory Measures and Enforcement to Mitigate the Interference*

No.	Action	Reference	Status (Completed/Ongoing/ not yet started)	Completion date	Remarks
1.	<p><b>Enhance collaboration with national radio regulator</b></p> <p>Existence of a coordination mechanism for detecting, geo-locating, and mitigating interference sources.</p>	ICAO/ITU/IMU Joint déclaration, action (d)			
2.	<p><b>Collaborate with the Radio Regulator to strengthen enforcement measures addressing the commercialization, purchase, possession, and use of illegal transmitters, including jammers and signal spoofers.</b></p> <p>Actions may include, inter alia:</p> <ol style="list-style-type: none"> <li>1. Coordinate with law enforcement and regulatory bodies to monitor and regulate the sale of such devices both online and offline.</li> <li>2. Criminalize the ownership of jammers and spoofers and work with relevant authorities to confiscate them effectively.</li> </ol>	<p>A42-8/C Resolution</p> <p>ICAO Electronic Bulletin 25/20</p>			

3.	<p><b>Ensure proper resolution for incidents of GNSS RFI with cross-border impact that cannot be solved nationally or internationally through routine procedures</b></p> <p>Existence of procedure to utilize the ITU Radio Regulations (RR) escalation procedure (RR Article 15) to report of interference incidents that could be resolved through routine procedure;</p> <p>Established procedure exists for reporting harmful interference and for the subsequent escalation to relevant authorities through ICAO Regional Office and ITU SIRRS</p>	<p>ICAO/ITU/IMU Joint déclaration, action (e)</p> <p>ITU Resolution 676</p> <p>ICAO Electronic Bulletin 25/20</p>			
4.	<p><b><i>enhance the capacity of technical staff to effectively detect, identify, investigate, and report harmful interference</i></b></p>	<p>FM WG/ Report</p>			
5.	<p><b>improve coordination with the military by facilitating the sharing of information on GNSS RFI testing and any relevant activities such as Counter-UAS operations</b></p>	<p>ICAO Electronic Bulletin 25/20</p>			